

IMAGES IN INTERVENTION

Transcatheter Aortic Valve Replacement on an Aortic Mechanical Valve



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A 71-year-old woman with a history of rheumatic heart valve disease and prior aortic and mitral mechanical valve replacement (Carbomedics #21 and #29, CarboMedics Inc., Austin, Texas, respectively), was referred for transcatheter closure of a mitral perivalvular leak due to New York Heart Association functional class III heart failure.

Transesophageal echocardiogram revealed an 18 mm × 6 mm mitral paravalvular leak at 9 o'clock (surgeon view). Because of severe calcification of the mitral ring with a transeptal approach, only the wire, but not the sheath, could be crossed through the leak. Therefore, an arteriovenous loop through the aortic valve was used to gain support, which enabled us to successfully advance the sheath through the mitral leak. At this point, the patient went into cardiogenic shock. A severe aortic regurgitation was confirmed by the aortogram, due to dislodgement of 1 of the aortic mechanical valve leaflets, which had embolized to the abdominal aorta (Figures 1A and 1B, Online Videos 1 and 2). The decision was made to implant a transcatheter aortic valve in a desperate maneuver to recover the patient (Figure 1C, Online Video 3). The valve was implanted uneventfully, and echocardiography subsequently

confirmed no residual aortic regurgitation (Figure 1D, Online Video 4). Mitral leak was successfully closed with an AVP III (Abbott Vascular [formerly St. Jude Medical], St Paul, Minnesota) 12 mm × 5 mm device in the same procedure.

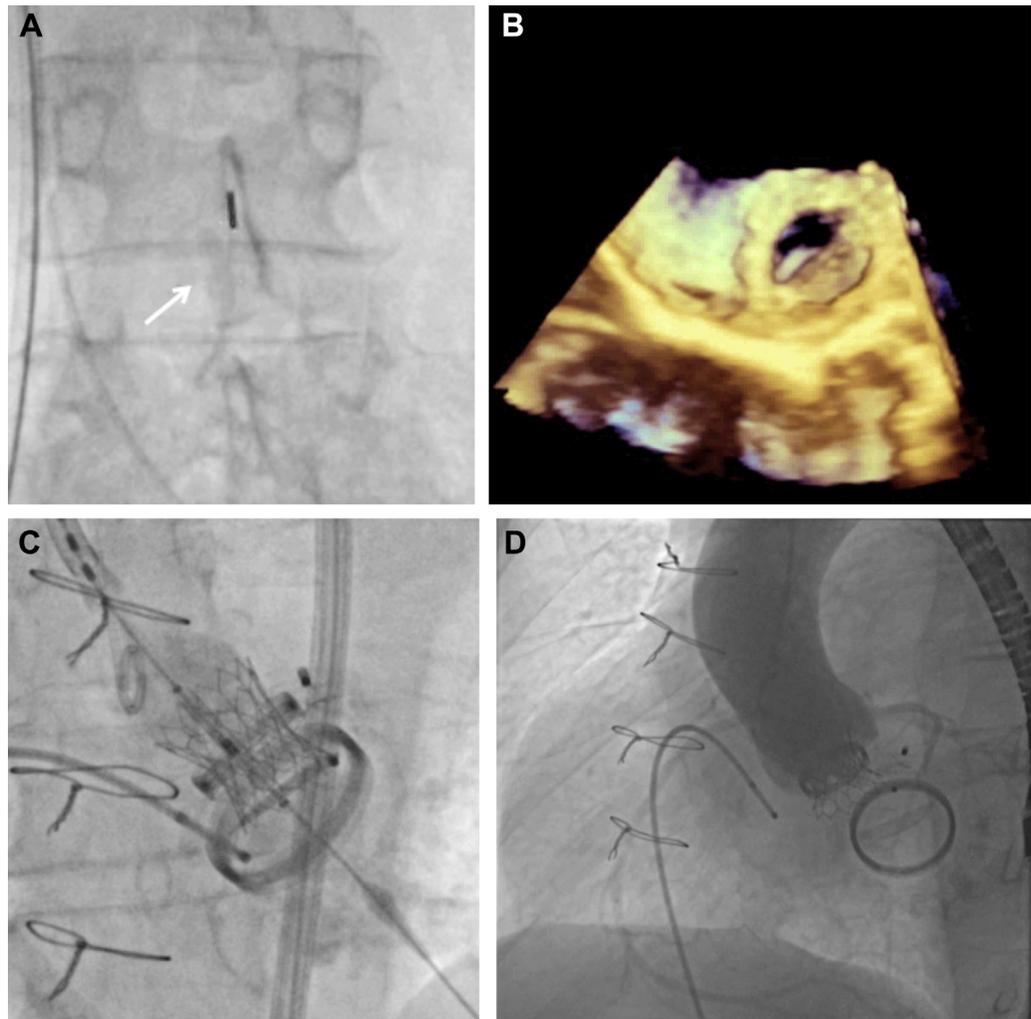
Leaflet dislodgments are rare complications of mechanical valves. They are mostly related to invasive interventions (cardiac catheterization, atrial fibrillation ablation) (1), but spontaneous dislodgments have also been reported (2). Mortality is high because most patients develop acute cardiogenic shock, and urgent surgery is warranted if feasible. However, most patients have a prohibitive surgical risk, given that they are in unstable hemodynamic condition and have already had a prior open-heart surgery. Transcatheter aortic valve replacement with an S3 valve (Edwards Lifesciences, Inc., Irvine, California) in mechanical aortic valve after leaflet embolization is feasible and can be considered in acute valve failure.

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FIGURE 1 Intraoperative Fluoroscopy and Transesophageal Echocardiogram During the Transcatheter Aortic Valve Replacement on the Mechanical Valve



(A) Fluoroscope, with **arrow** pointing to the embolized leaflet ([Online Video 1](#)). (B) Three-dimensional transesophageal echocardiogram showing the absence of one of the aortic leaflets ([Online Video 2](#)). (C) Implantation of the 23-mm SAPIEN 3 valve (Edwards Lifesciences) ([Online Video 3](#)). (D) Aortogram showing no residual leak through the implanted transcatheter aortic valve ([Online Video 4](#)).

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KEY WORDS embolization, paravalvular leak closure, TAVR

APPENDIX For supplemental videos, please see the online version of this paper.